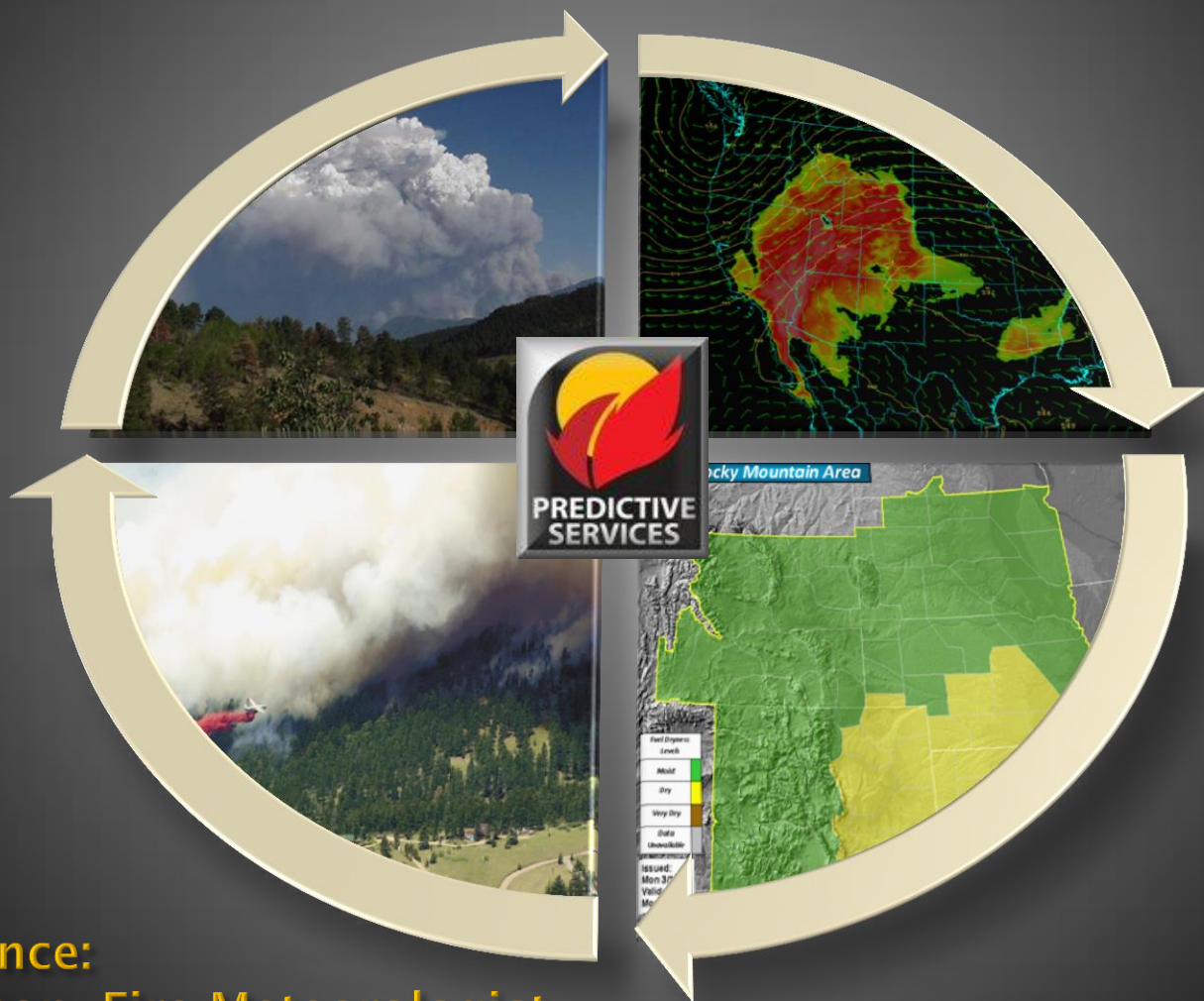




Predictive Services

Rocky Mountain Area 30-120 Day Monthly/Seasonal
Fire Potential Outlook...Dec 1st, 2016



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Seasonal Outlook

Considerations

Antecedent Conditions

- ☐ Weather Patterns of Fall 2016
- ☐ Temperature Anomalies
- ☐ Precipitation and Drought Comparisons
- ☐ Fuel Moisture

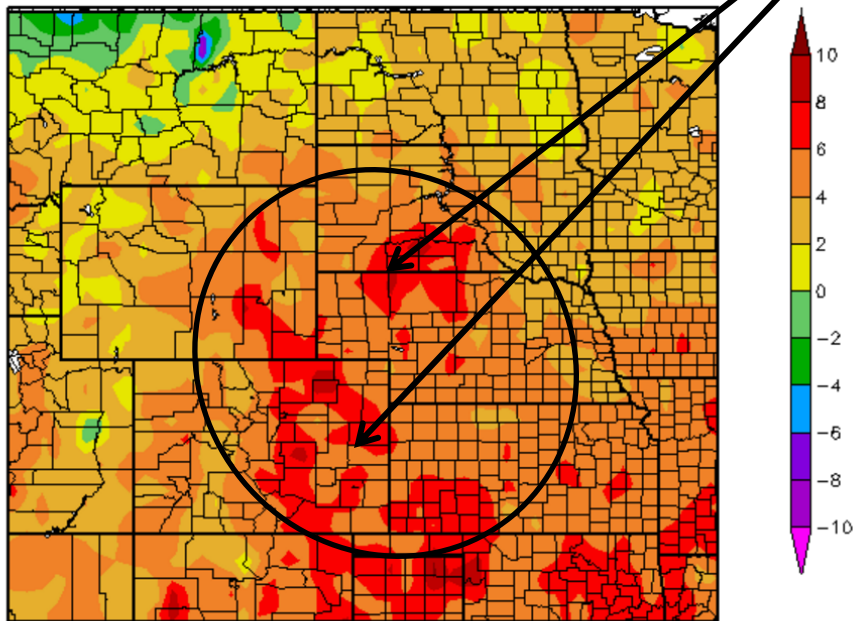
Prediction

- ☐ Predictors
 - ☐ General SST Anomalies and Predictions (El Nino, La Nina)
- ☐ Short Term and Long Term Forecast Charts
- ☐ Final Thoughts and Considerations for the Winter and Early Spring 2016-17

Seasonal Outlook

Above average temperatures have persisted during October and November this year across most of the RMA, particularly east of the Continental Divide.

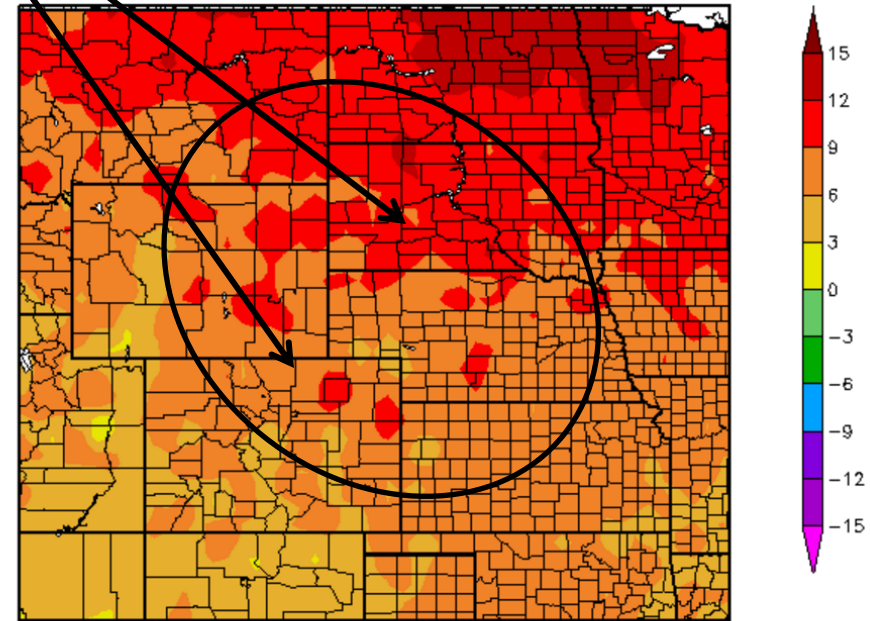
Departure from Normal Temperature (F)
10/1/2016 – 10/31/2016



11/11/2016 at HPRCC using provisional data.

Regional Climate Centers

Departure from Normal Temperature (F)
10/31/2016 – 11/29/2016



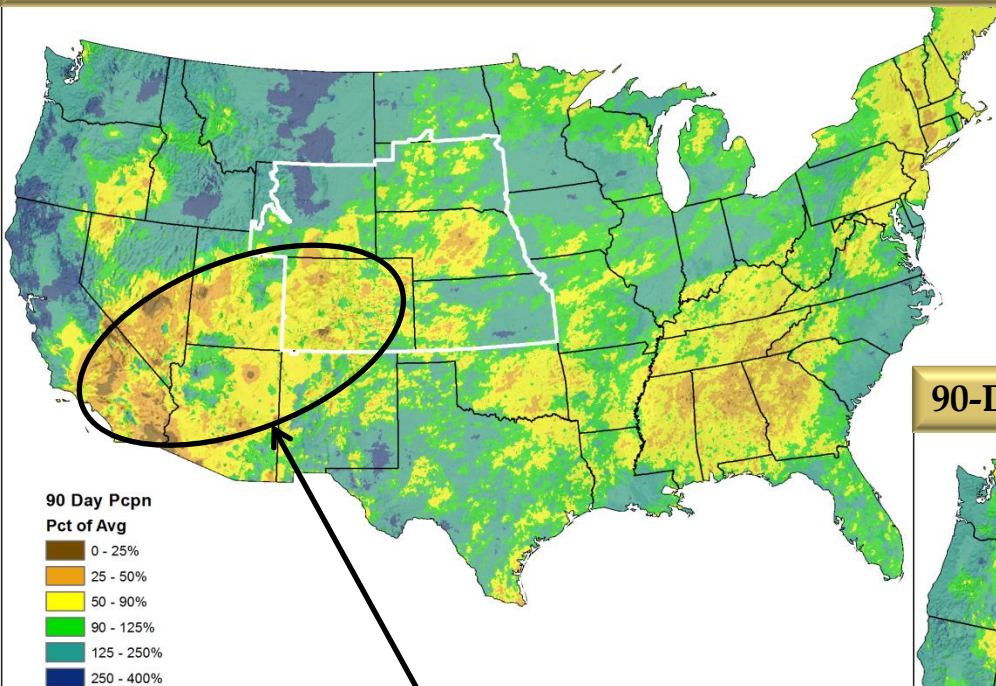
11/30/2016 at HPRCC using provisional data.

Regional Climate Centers



Seasonal Outlook

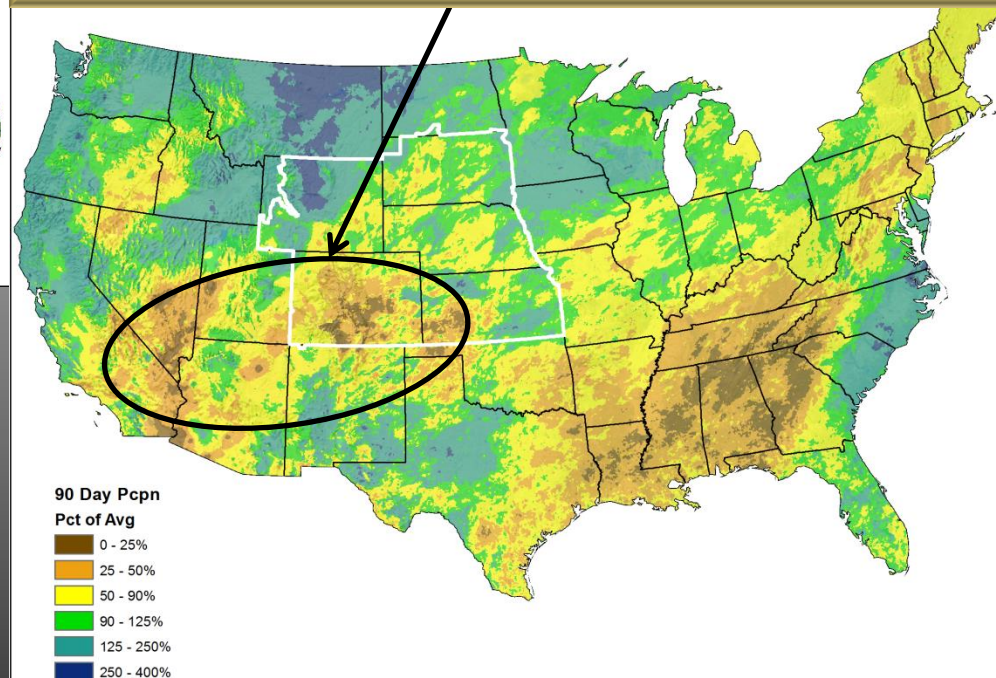
90-Day % of Average Precipitation (8/1/2016-10/31/2016)



Drier than average shown across portions of the southwest U.S. and Colorado August-October, while wetter than average conditions occurred over much of Wyoming. Mixed (wet/dry) conditions noted across the eastern plains.

The most significant dryness for the September-November period remained across portions of the southwest U.S. and intensified over Colorado and southwest Kansas. A wetter than average regime persisted over Wyoming, with a mixed (wet/dry) pattern across the eastern plains.

90-Day % of Average Precipitation (9/1/2016-11/30/2016)

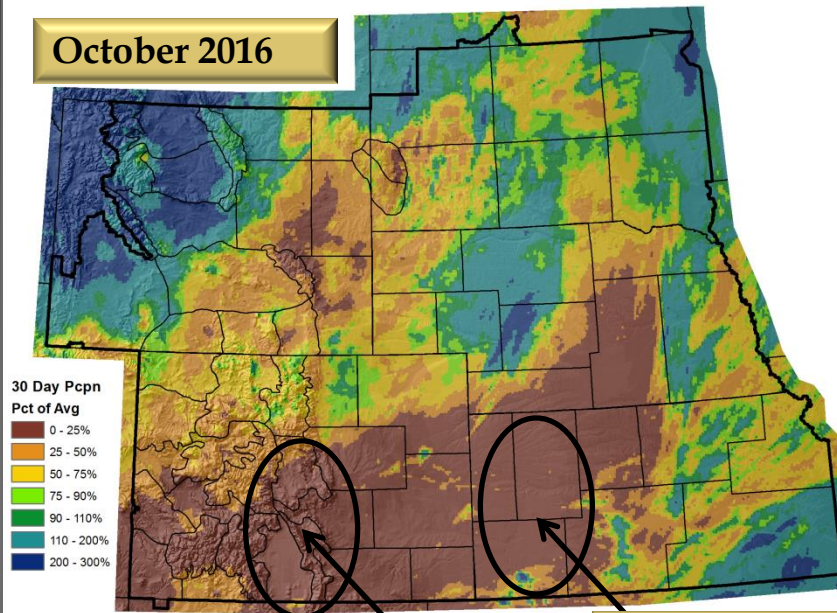




Seasonal Outlook

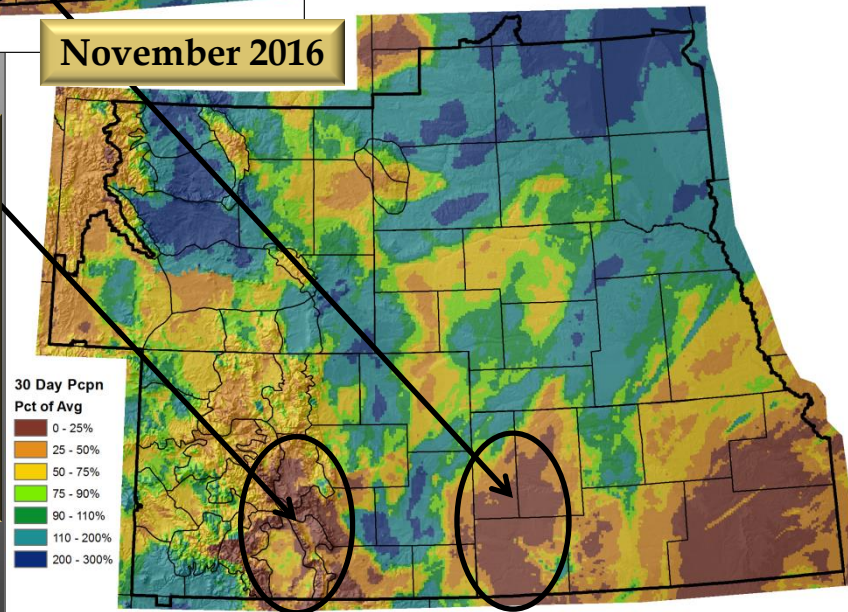
October 2016 and November 2016 Percent of Average Precipitation

October 2016



October precipitation map shows major deficits across the southern half of Colorado into western Kansas, and to a lesser extent south-central Nebraska and east-central Wyoming (less than 25% of average). Wetter than average conditions were most evident across western and northern Wyoming.

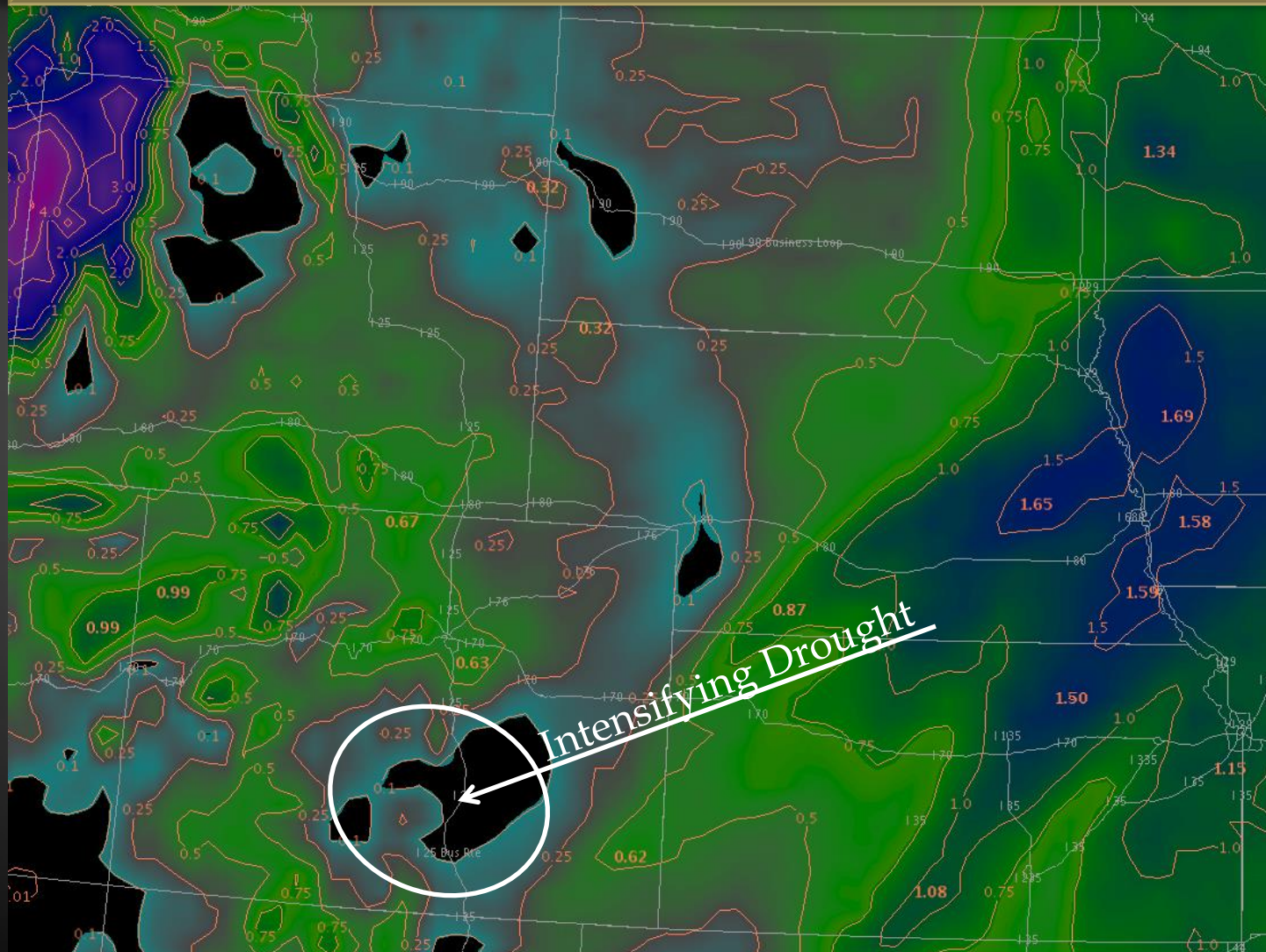
November 2016



November precipitation was significantly below average in the southern Colorado front range area and much of Kansas (less than 25% of average), while central to eastern Wyoming and South Dakota received the most widespread coverage of above average precipitation.

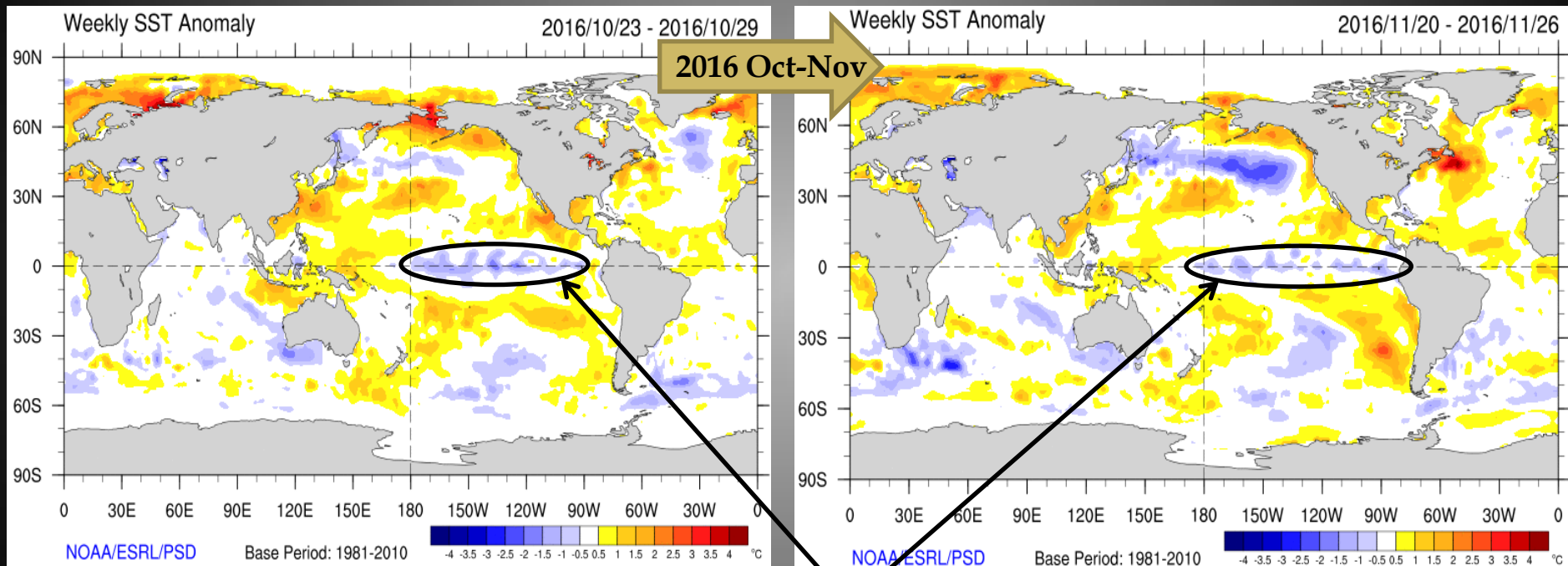
Seasonal Outlook

Short term model forecast precipitation for Nov 30th-Dec 9th reflect an active storm track with somewhat widespread precipitation, although the southern Colorado front range may miss out on the brunt of moisture intensifying the drought in that area. *Amounts in inches.



Seasonal Outlook

Tropical Sea Surface Temperature Anomalies



Tropical Pacific sea-surface temperature anomalies continue to show cool anomalies (weak La-Nina signature).

Seasonal Outlook

El Nino Southern Oscillation (ENSO) Forecast

Latest models (run mid-November 2016) show current and consensus forecast of weak La Nina (≤ -0.5 degrees Celsius) through winter 2016-17, and Neutral trends by early spring 2017.

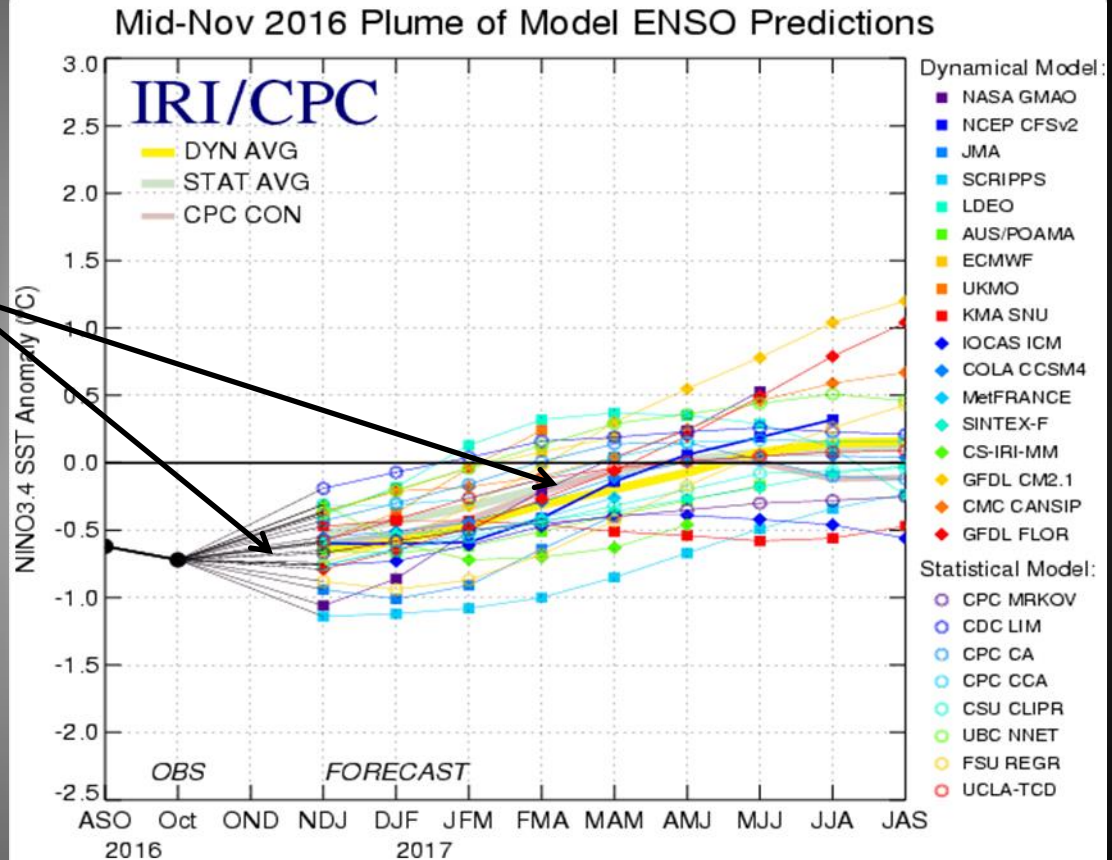
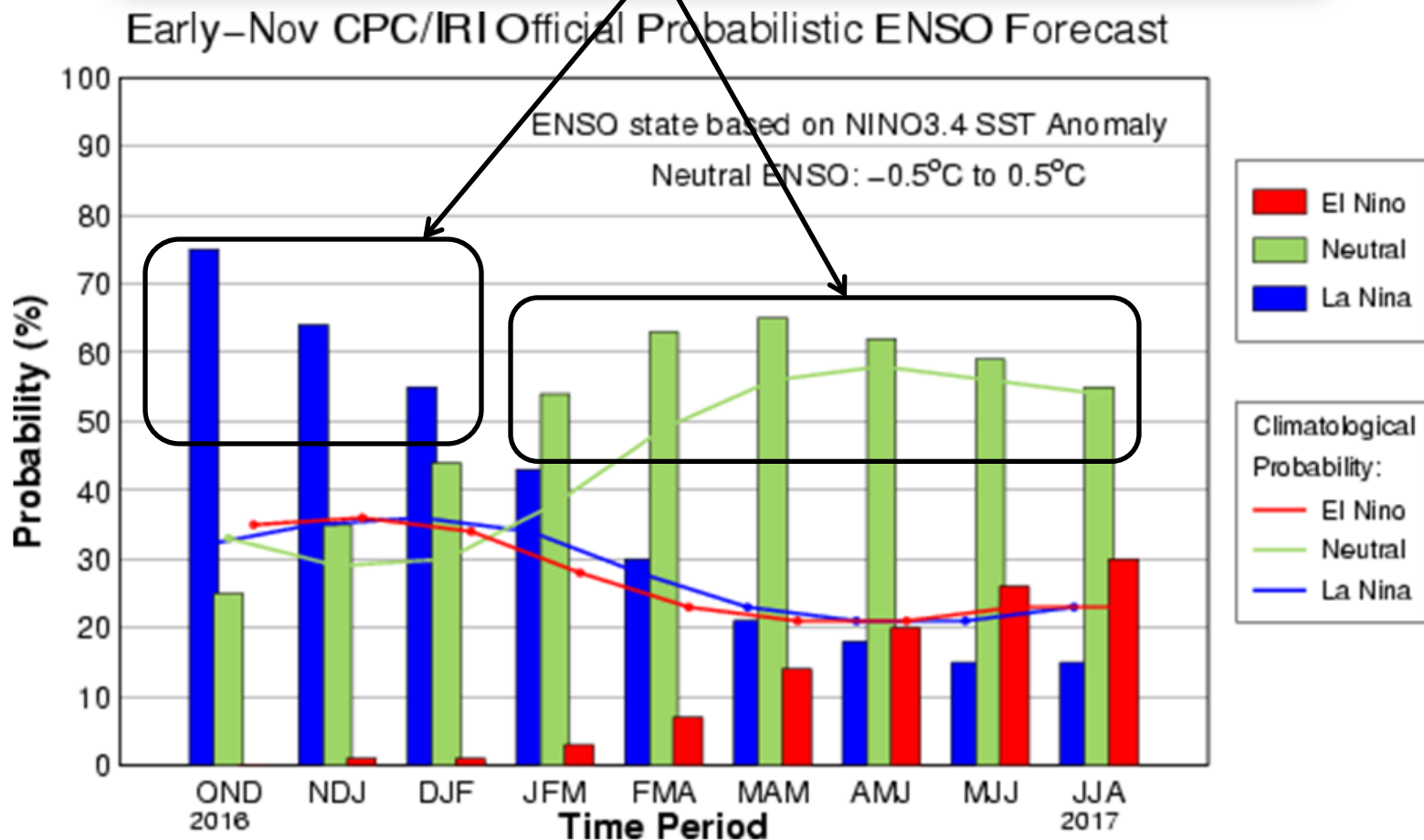


Figure provided by the International Research Institute (IRI) for Climate and Society (updated 15 November 2016).

Seasonal Outlook

El Nino Southern Oscillation (ENSO) Forecast

CPC/IRI forecasts favor La-Nina conditions (blue bars 55%-75% chance) through winter 2016-17, then Neutral trends for late winter and spring (green bars 55%-65% chance).



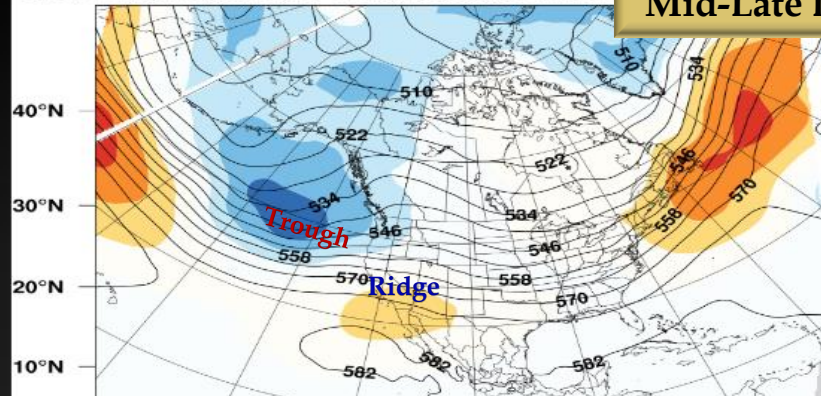
Seasonal Outlook

Pressure Patterns Mid Dec-Mid Jan

Mean/Anom Geopotential Height [500 mb] (dam)

CFSv2 Initialization: 2016-11-26, Forecast Period:

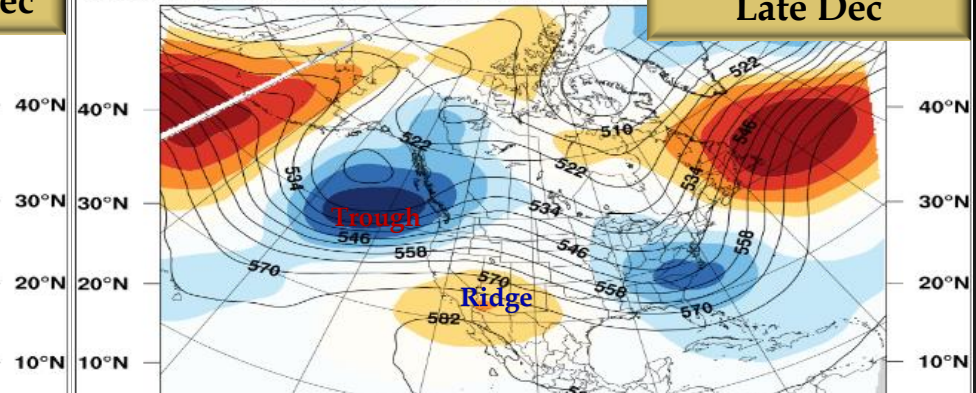
Mid-Late Dec



Mean/Anom Geopotential Height [500 mb] (dam)

CFSv2 Initialization: 2016-11-26, Forecast Period:

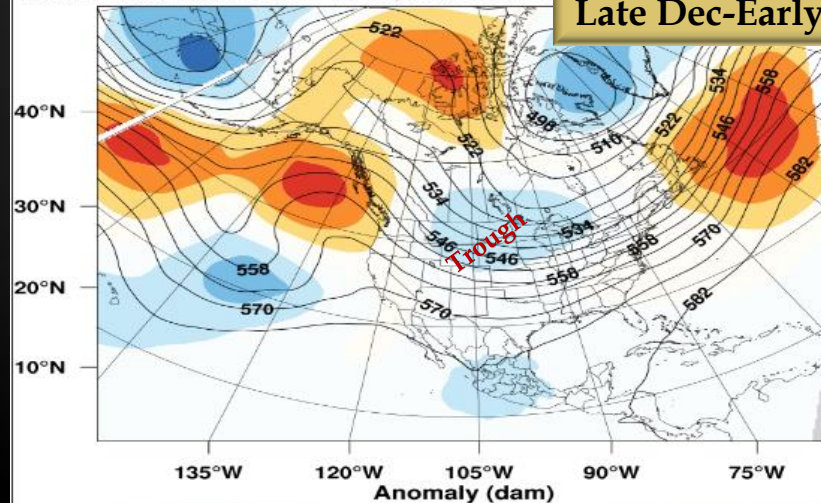
Late Dec



Long range upper-air forecast models (mid Dec into mid Jan) in the vicinity of the RMA show a low amplitude pattern (weak ridges and troughs) overall from the middle of December through the middle of January, implying a non-extreme (neither exceptionally cool/wet or exceptionally warm/dry) weather regime for the RMA. *The blue indicates upper level low pressure (troughs) associated with the cooler and/or wetter periods, with the brown colors indicating upper level high pressure (ridges) implying warm and/or dry periods.

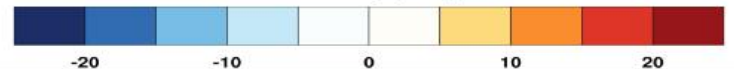
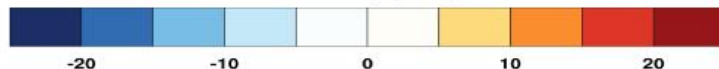
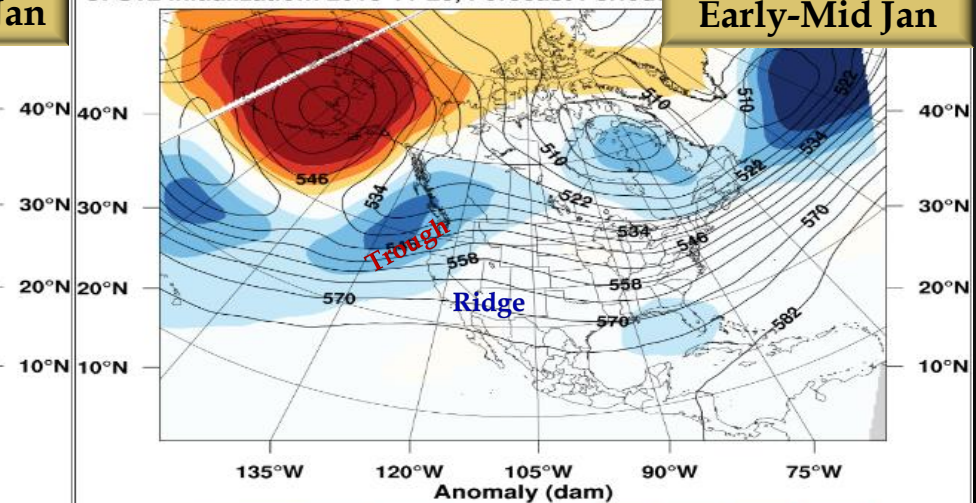
CFSv2 Initialization: 2016-11-26, Forecast Period:

Late Dec-Early Jan



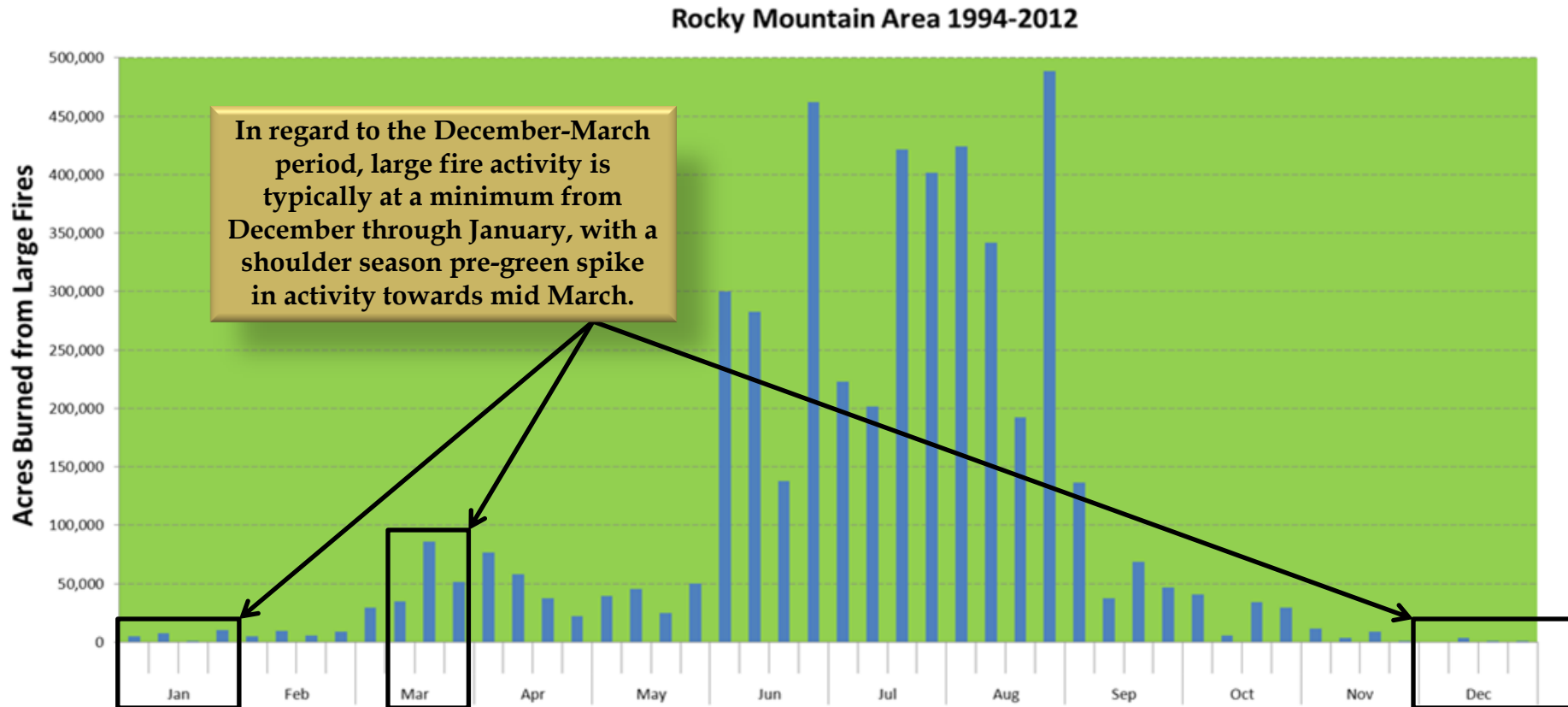
CFSv2 Initialization: 2016-11-26, Forecast Period:

Early-Mid Jan



Seasonal Outlook

Rocky Mountain Area Fire History

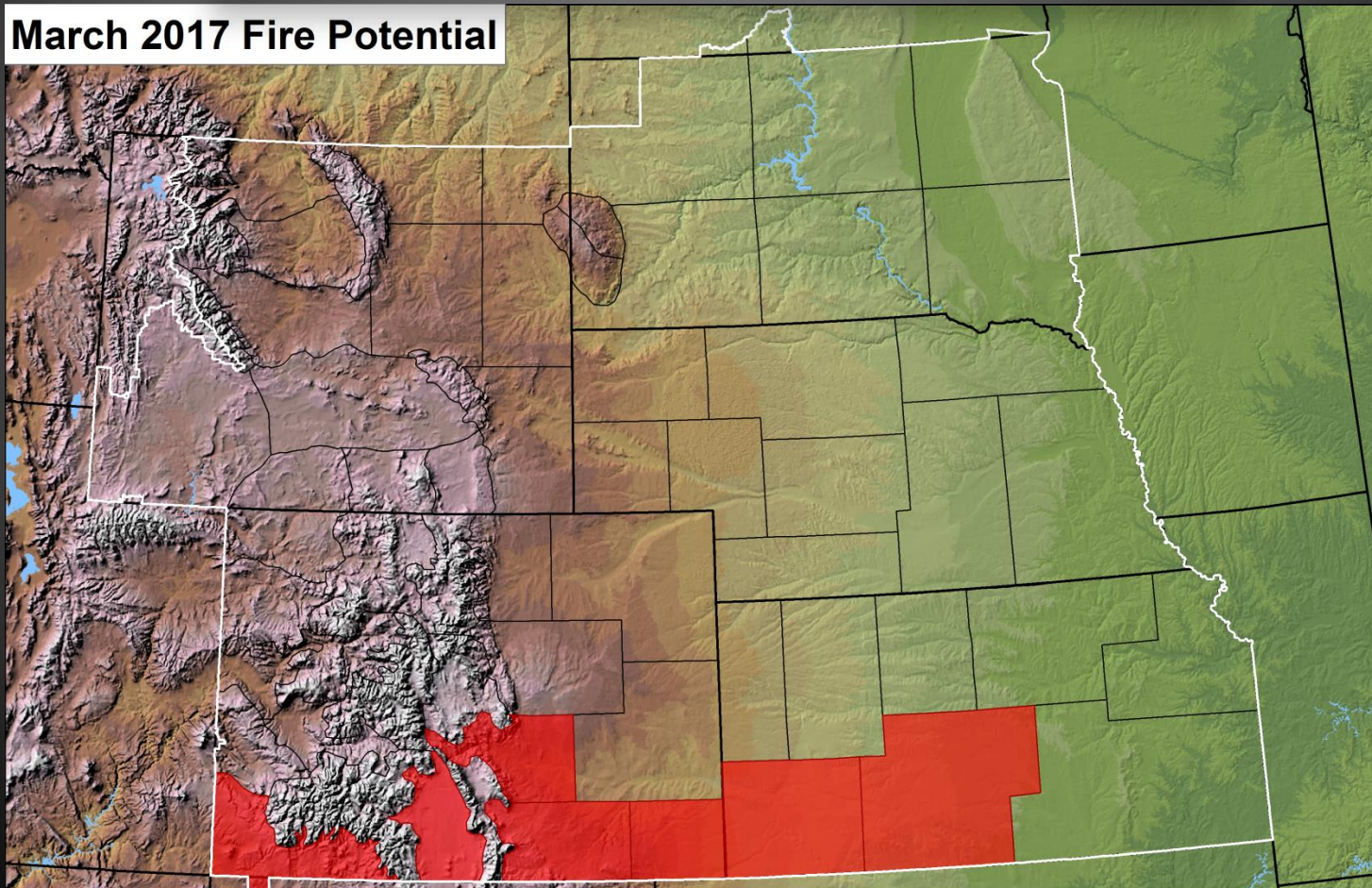


Seasonal Outlook

Fire Potential Outlook Map

Indicators point towards average large fire risk during the Winter period for the RMA, but with trends pointing towards above average risk by early spring as seasonal warm, dry, and windy periods emerge and combine with potential drought conditions during the March pre-green period.

March 2017 Fire Potential



Seasonal Outlook–Summary

Current Climatology

During November the greatest precipitation deficits occurred over the southern Colorado front range area and a large portion of Kansas with less than 25% of average, while above average amounts were most prevalent over central to eastern Wyoming and South Dakota. The November moisture deficits in the southern front range and southwest Kansas serve to accentuate longer term drought conditions in those areas. Above average temperatures have persisted during October and November this year across most of the RMA, particularly east of the Continental Divide.

Fuels

An abundant dead grass and brush fuel component remains in place in the lower elevations and foothills of the Rocky Mountain Area. Snowfall in the higher elevations has gotten off to a slow start, and many mountain locations typically under snow cover this time of year are bare as of late November, especially in the southern Colorado front range.

Weather Predictions

Short to medium range forecast models for the early portion of December indicate an active weather pattern typically for this time of year with the passage of frontal systems and associated opportunities for precipitation and cold temperatures at times. Long range predictors in the tropical Pacific indicate a weak La-Nina phase (cooler sea-surface temperatures) during winter 2016-17. While these predictors (tropical Pacific sea-surface temperatures) point towards a cooler/wetter regime during the winter into early spring across the northern tier of the U.S., and a warmer/drier environment in the southern portion of the U.S.; RMA forecasts are for near average precipitation and temperatures during the winter 2016-17, except a warmer and drier signal edging into southern Colorado and southwest Kansas.

Considerations and Fire Season Outlook

Fire activity during December and January are on average the slowest months of the year for the RMA, and the expectation is that any large fires that occur will be short duration, wind driven, and constrained to the lower elevations and grasslands. The primary fire carrier this time of year is dead grass and brush which is abundant this year as a result of a wetter than average spring and early summer east of the continental divide. Short and long range precipitation and temperature forecasts indicate average values overall during the winter and early spring period 2016-17, except a warmer and drier signal edging into southern Colorado and southwest Kansas. Resultant large fire risk expectations during the outlook are for average conditions, except above normal developing by the pre-green shoulder season period (March) in the lower elevations and foothills of southern Colorado and southwest Kansas.